

ASPIRE3-E-CreativeEngineeringDesign_VB

ERC's Creative Engineering Design Project Expands Student Engineering Engagement in Denver

Outcome/accomplishment: In an effort to engage high school students in the engineering design process, the NSF-funded Engineering Research Center (ERC) Advancing Sustainability through Powered Infrastructure for Roadway Electrification (ASPIRE), headquartered at Utah State University, has introduced a team-based electric vehicle- and environmental justice-focused high school engineering course in Denver, Colorado.

Impact/benefits: Creative Engineering Design is a project-based engineering course that engages high school students, especially students from underrepresented and underserved communities, to explore widespread and accessible vehicle electrification as a solution for transportation-related air quality and climate change. Students learn through hands-on and project-based engineering activities connected to everyday applications.

Explanation/ background: The Creative Engineering Design course had a successful first year pilot at two diverse Denver high schools, engaging two teachers, 18 classes, and 468 students. Taking an interdisciplinary approach, the course weaves in threads from the engineering design process, engineering skills development, and environmental justice. The course culminates in a model electric vehicle design-build-test-iterate project.

Students also build knowledge about the intersections between particulate matter air pollution, air quality, health impacts, and environmental injustice in communities using ArcGIS StoryMap technology.



Student teams collaborate to build, design, test, and iterate their model electric vehicles. (Photo credit: ASPIRE)